

Terrapin Excluder Devices (TEDs) in Commercial Blue Crab Traps, a SCDNR Cooperative Research Study

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Diamondback terrapin (*Malaclemys terrapin*)

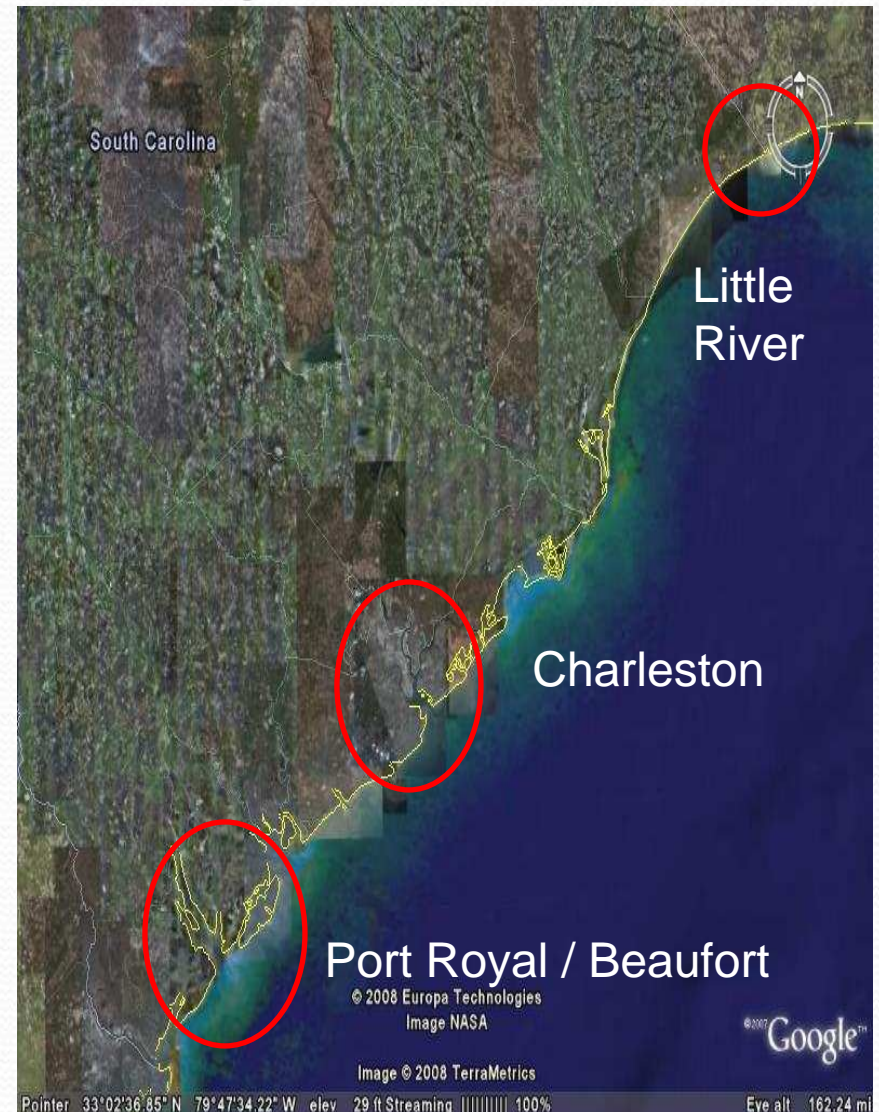


Background on SCDNR's Cooperative Research Program

- DNR received \$1.8 million from the National Marine Fisheries Service (NMFS)
- Money has been distributed to commercial and recreational fishermen to benefit marine fisheries
- The Cooperative Research Program is funded through September 2009
- To date, the project has funded 21 contractual and 21 grant funded projects – all are in various stages of completion and an additional 5-8 additional research projects will be funded this year.

Current Cooperative Terrapin/Blue Crab Research Projects

1. **Commercial Crabber Logbook study - TEDs vs. non TEDs (*Started May 2006*)**
 - 3 Crabbers (*Little River area, Charleston area and Port Royal area*) contracted to fish 20 traps - 10 w/ TEDs, 10 w/o TEDs
 - Collect weekly CPUE and Socioeconomic data; Monthly DNR personnel accompany the fishermen and collect more detailed biological and water quality data
2. **Commercial Crabber Logbook Study**
 - 3 Crabbers (*Little River area, Charleston area and Beaufort area*) contracted
 - Collect weekly CPUE and Socioeconomic data on 30 traps– including info on Terrapin captures



Cooperating Crabbers



Walter Hughes
Little River Area
TED/BCL/BG Shrimp



Allen Grooms
Charleston Area
TED/BCL



William Gay
Port Royal Area
TED

Terrapin Range & State Regulations



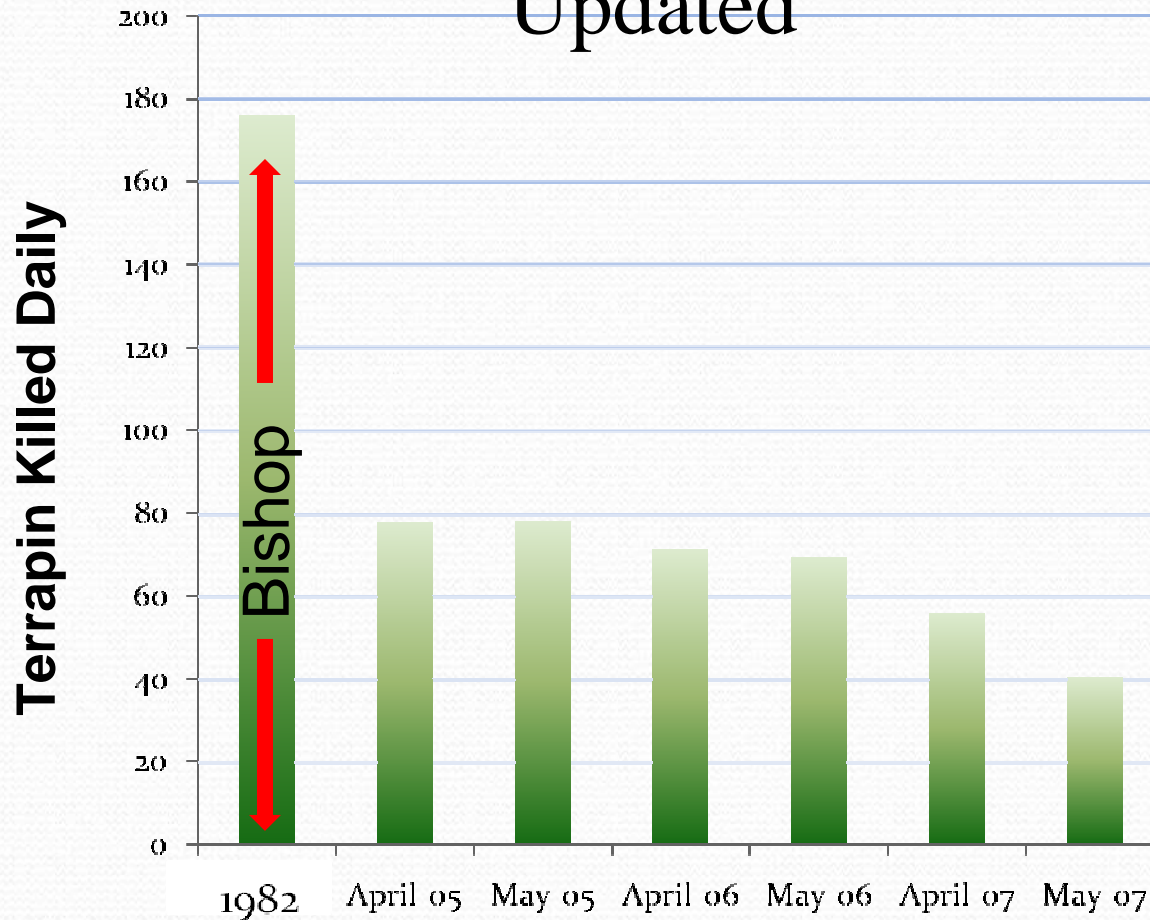
<http://nytts.org/proceedings/wood-ct.jpg>

- Mass. & RI – Educational Permit Only
- Conn. & NY– Seasonal, Shell must be between 4-7" Bag limit 5
- NJ- Seasonal, 5" min. size, **Crab Pots in any body of water less than 150' across must posses 2"x6" TED**
- DE- Seasonal, Bag limit 4, **Recreational Crab Pots must have 1³/₄" x 4³/₄" TED**
- MD- Seasonal, **Recreational Crab Pots must have 1³/₄" x 4³/₄" TED**
- VA- Bag limit 5, Gear Restrictions
- GA- Seasonal, Permit Required for Commercial Possession
- NC, **SC**, FL, AL & MS- No Commercial Possession
- LA- Seasonal, 6" min size, Licenses Required
- TX- Permit Required to Take more than

Previous Terrapin Research

- Terrapin Excluder Devices (plastic and wire) on Blue Crab traps were effective at excluding most adult female Terrapins (Belcher, Sheirling 2005) and increase Blue Crab catch by 5-25% (Guillory 1998)
- Observations in the Kiawah River over the past 21 years show a shift in demography and sex ratios suggesting selective mortality of smaller individuals in crab pots (Dorcas et al. 2007)
- Terrapins are most commonly caught SC crab traps after they emerge from hibernation in April and May (Bishop 1983)
- Terrapin Mortality in crab pots is 10% with a catch rate of 0.16 per pot resulting in 176 Terrapin Killed Daily (Bishop 1983)

Bishop's Results Updated

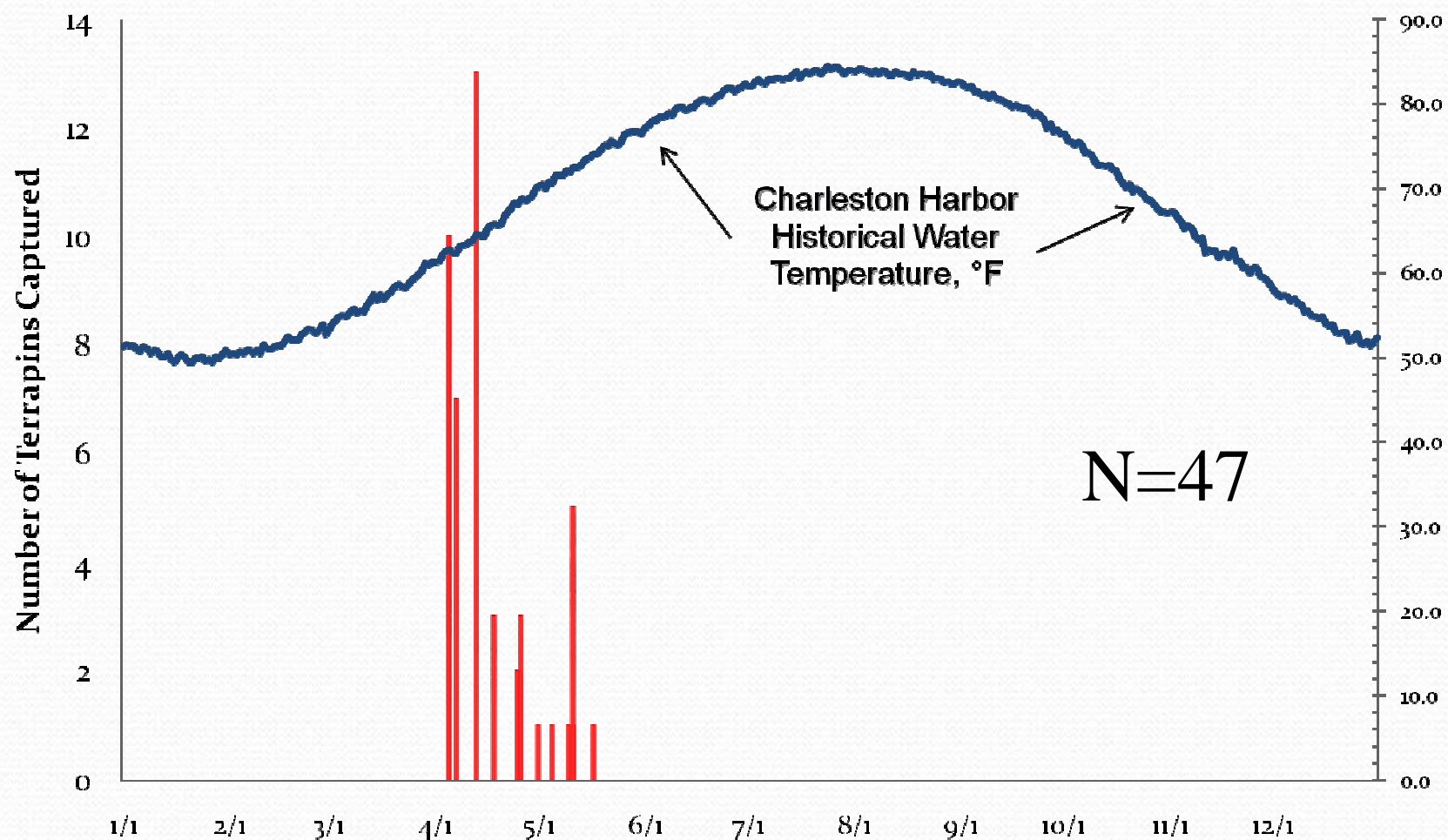


Months	Traps	Crabbers
1982	27480	458
4/1/2005	12137	146
5/1/2005	12192	160
4/1/2006	11123	129
5/1/2006	10859	129
4/1/2007	8709	106
5/1/2007	6301	82

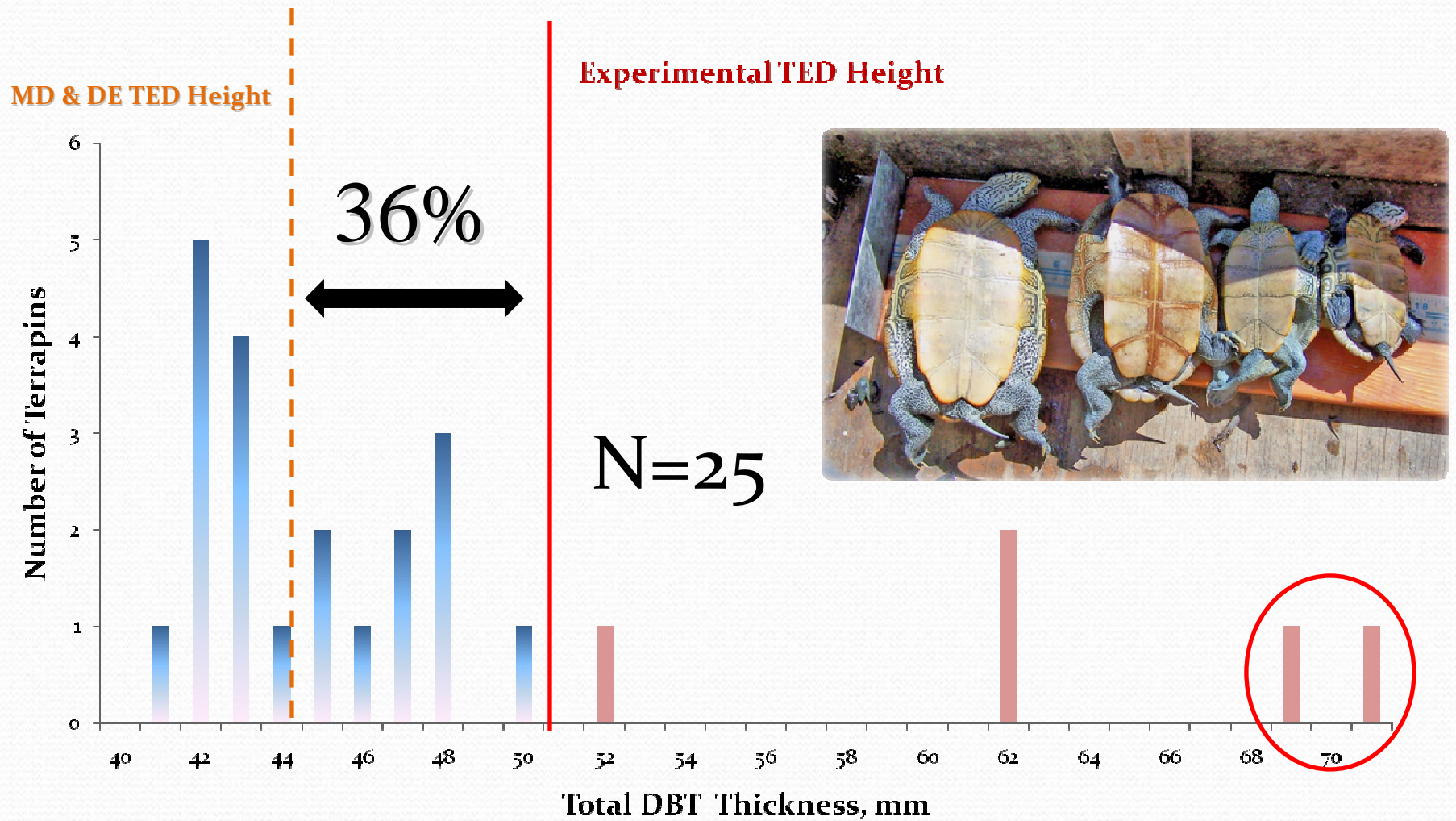
'05-'07 Avg. = **65**
Terrapin Killed
Daily

65 Terrapin x 61 Days = 3965 Terrapin Killed in April & May

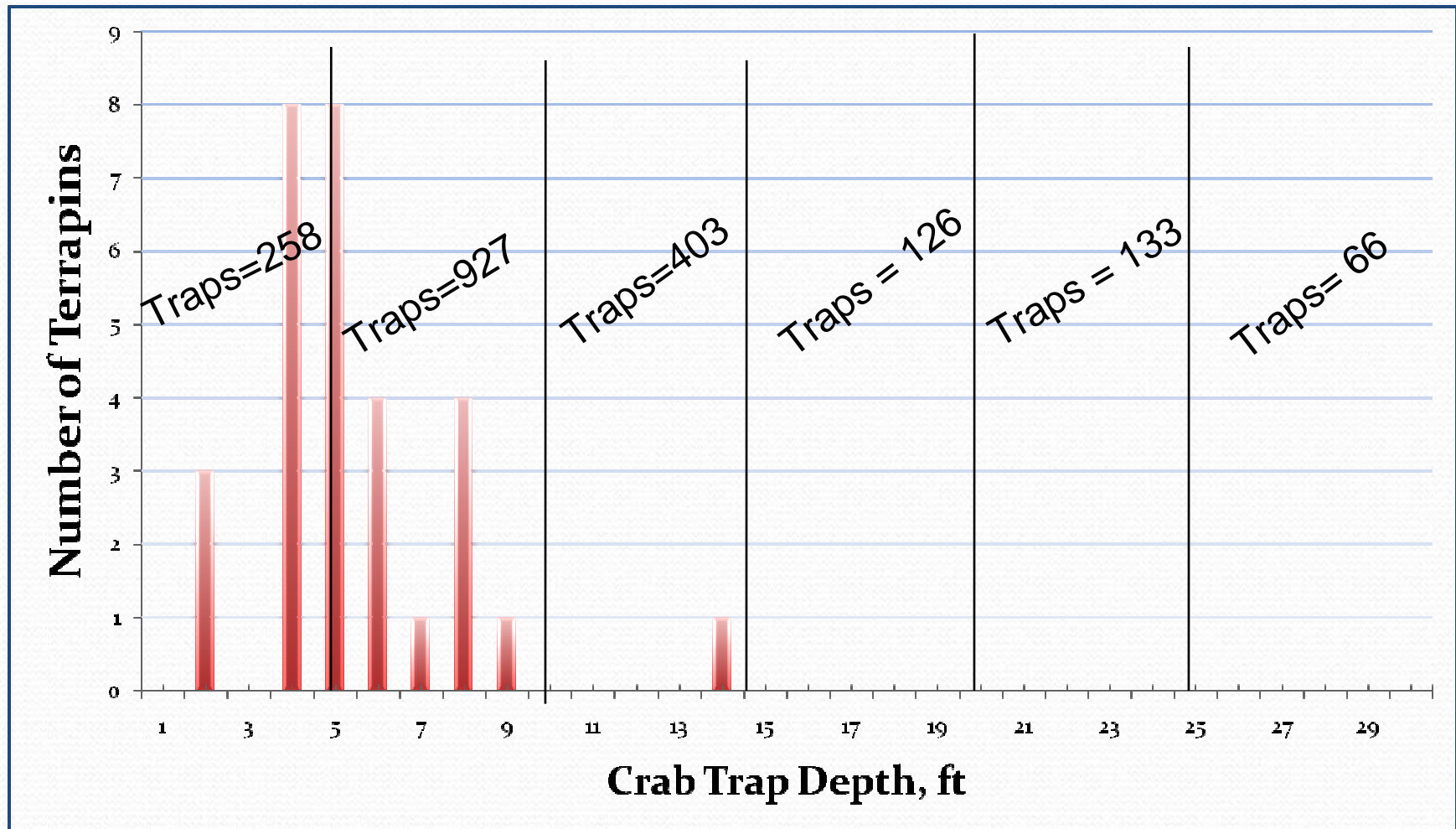
Terrapin Capture By Time of Year



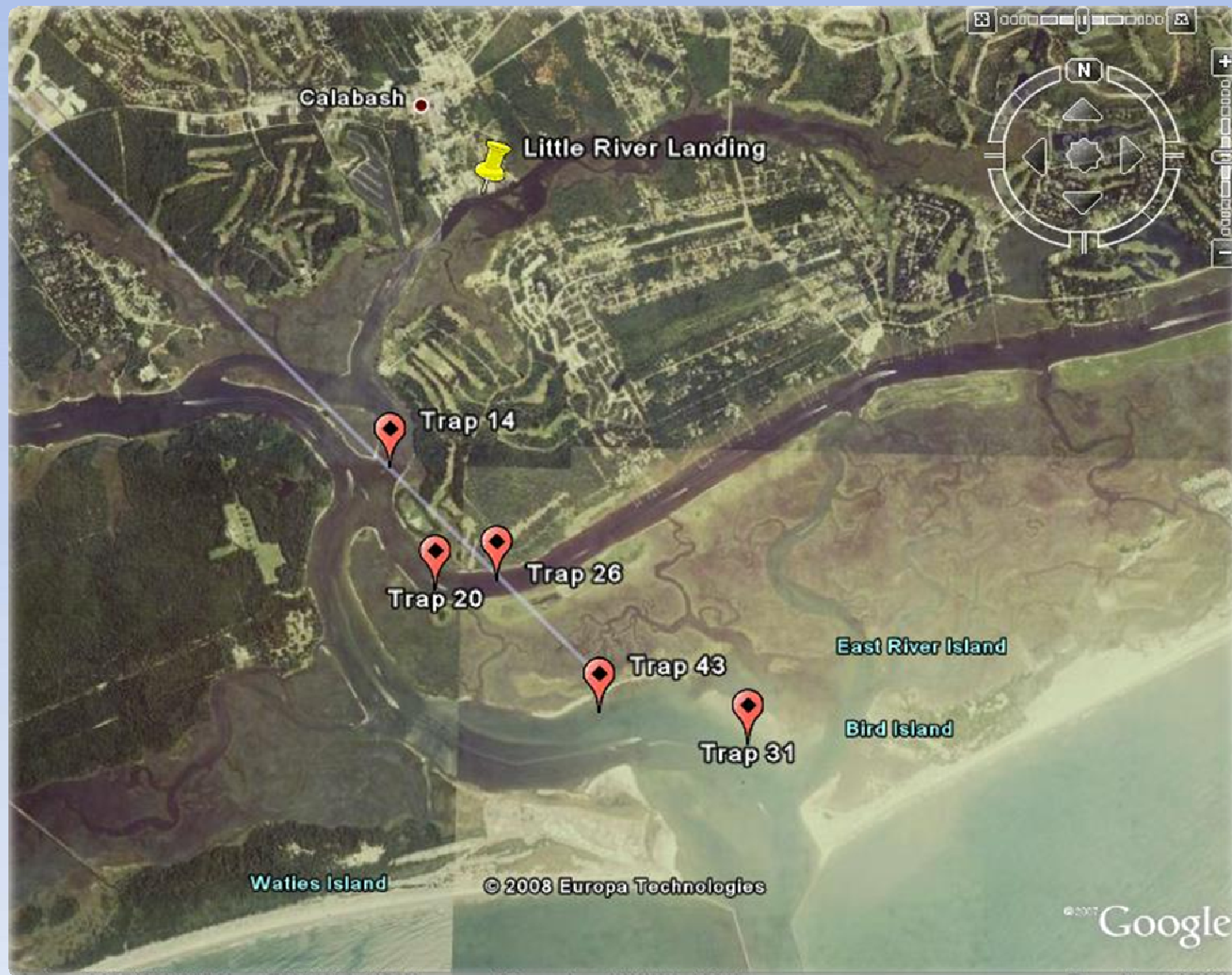
Distribution of Terrapins by Thickness



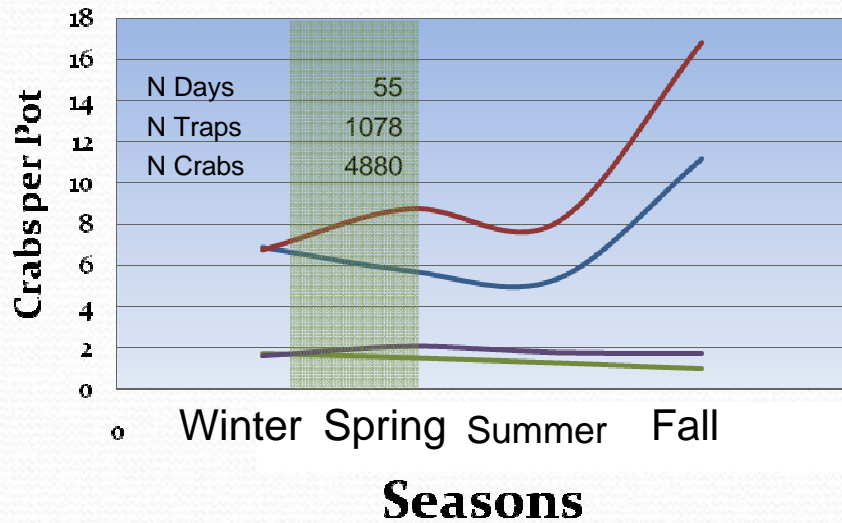
Terrapin Capture vs. Trap Depth



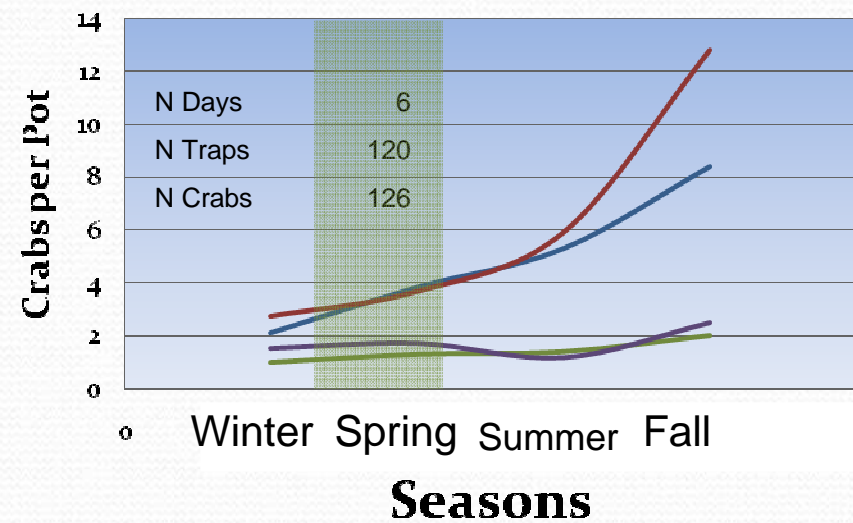
Map of **Little River** TED Study Area



CPUE Little River Area **Crabber** Data

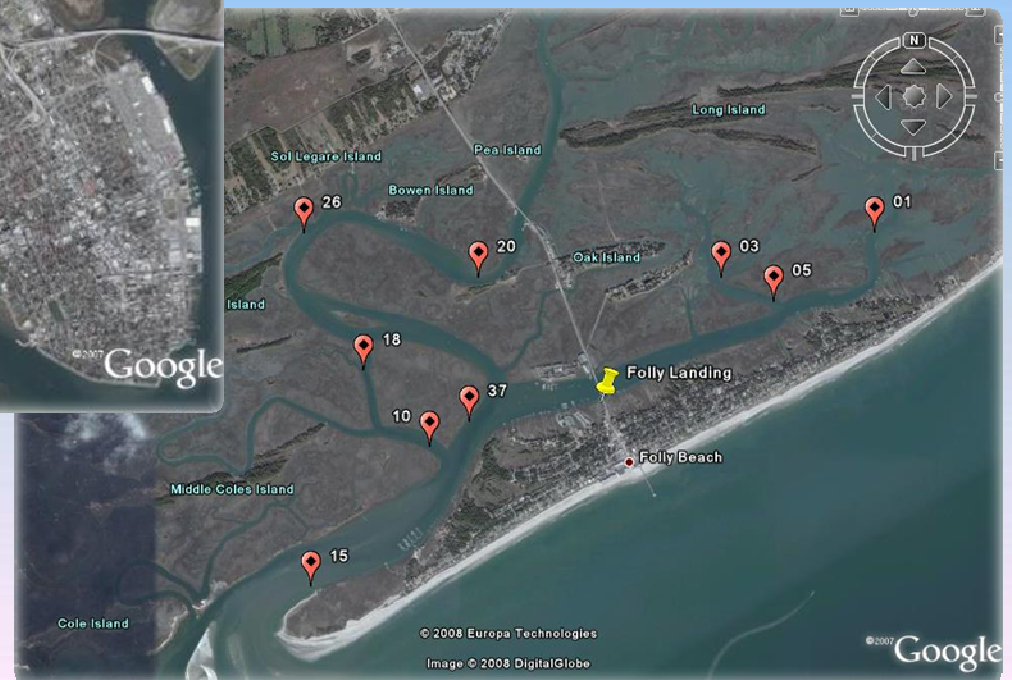
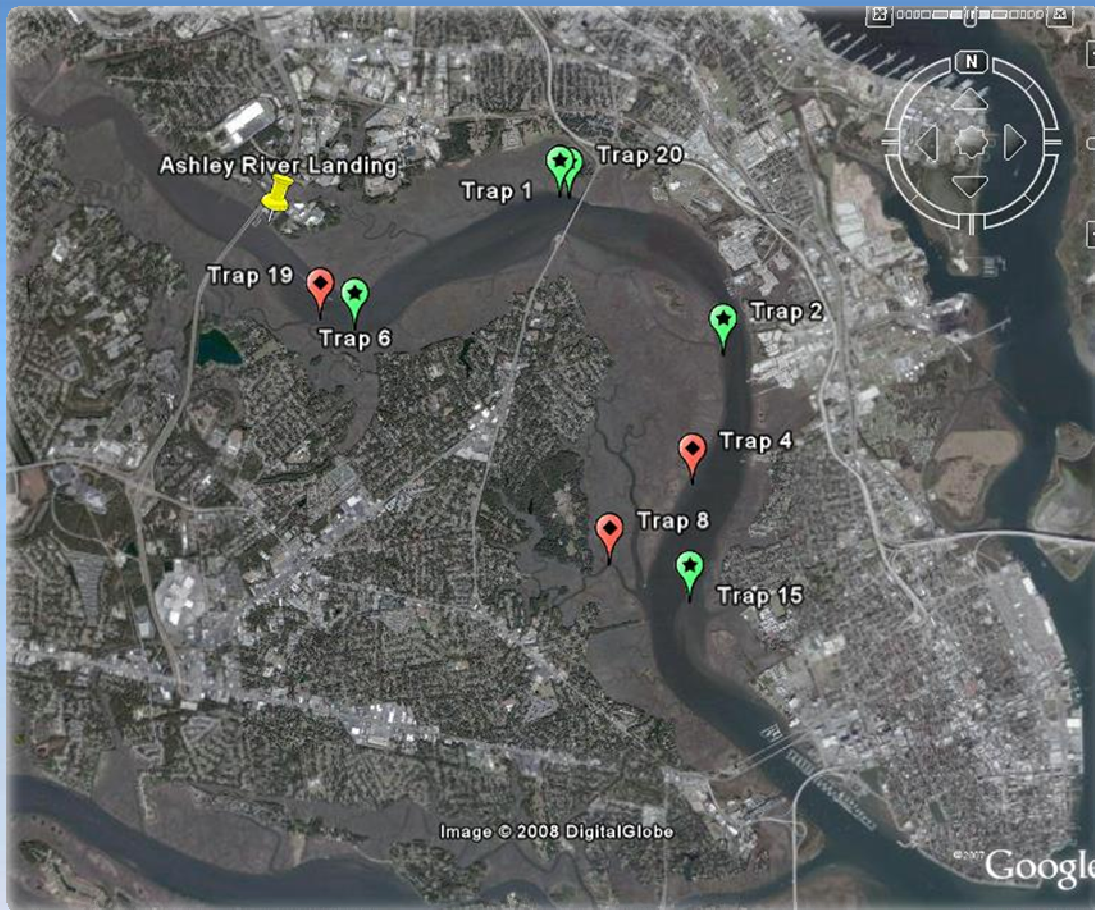


CPUE Little River Area **DNR** Data



- CPUE Legal Crabs in Pots with TEDs
- CPUE Legal Crabs in Pots without TEDs
- CPUE Sublegal Crabs in Pots with TEDs
- CPUE Sublegal Crabs in Pots w/o TEDs

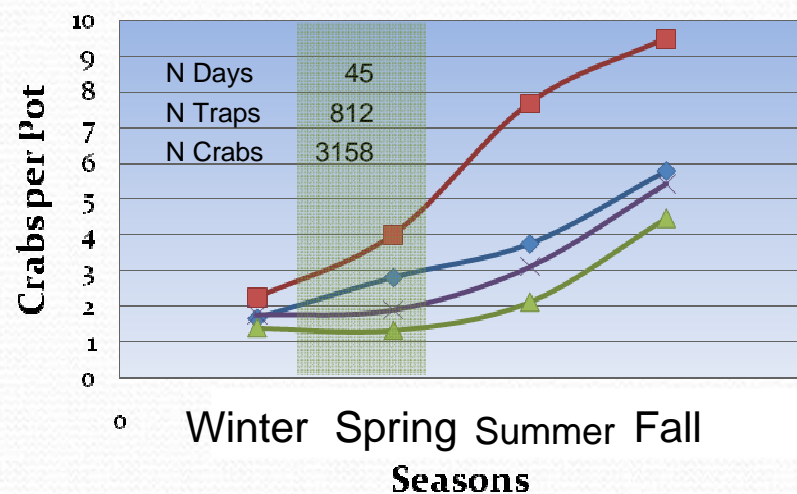
Map of **Charleston** TED Study Areas



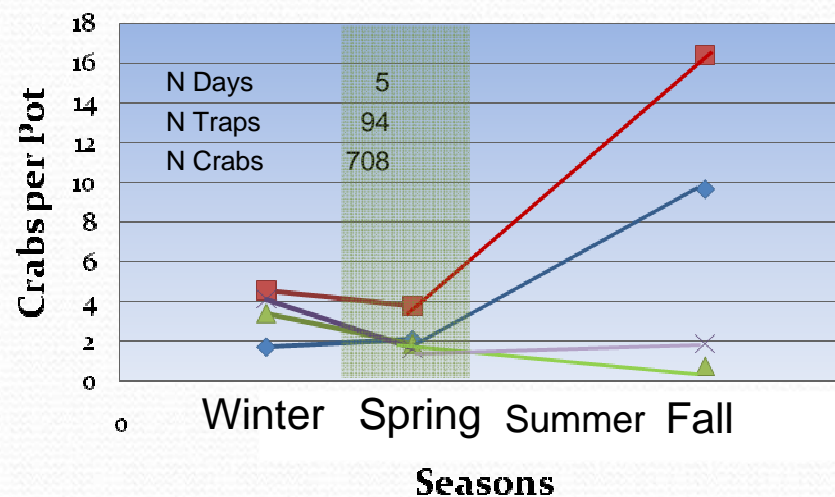
Winter Folly Crabbing Area



CPUE Charleston Area Crabber Data



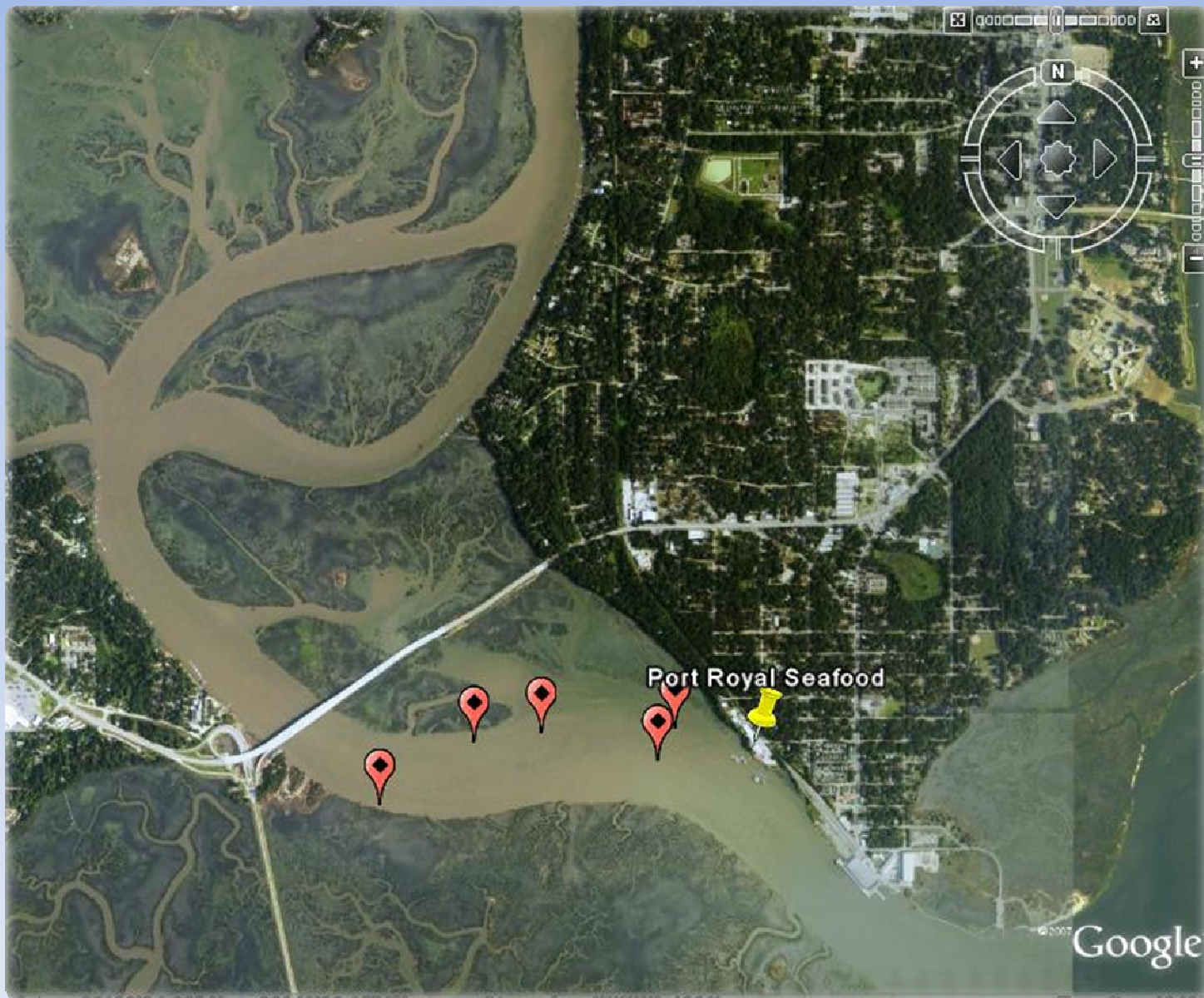
CPUE Charleston Area DNR Data



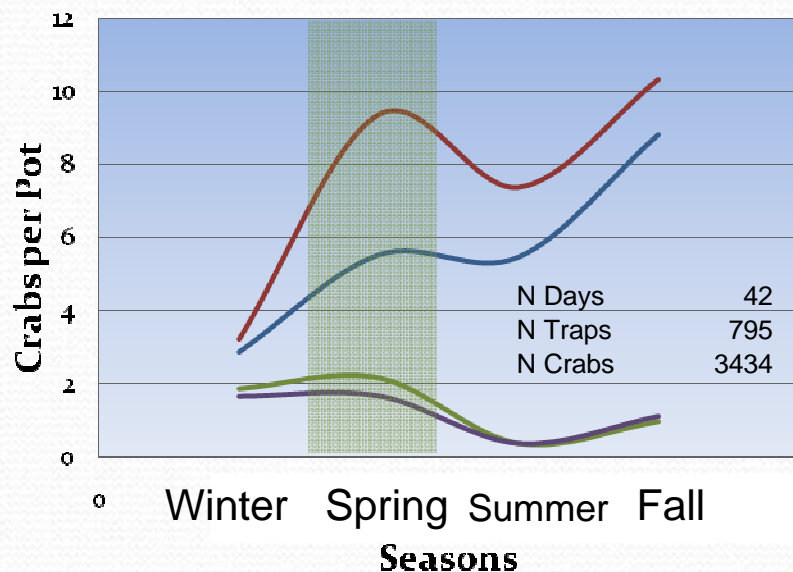
- CPUE Legal Crabs in Pots with TEDs
- CPUE Legal Crabs in Pots without TEDs
- CPUE Sublegal Crabs in Pots with TEDs
- CPUE Sublegal Crabs in Pots without TEDs



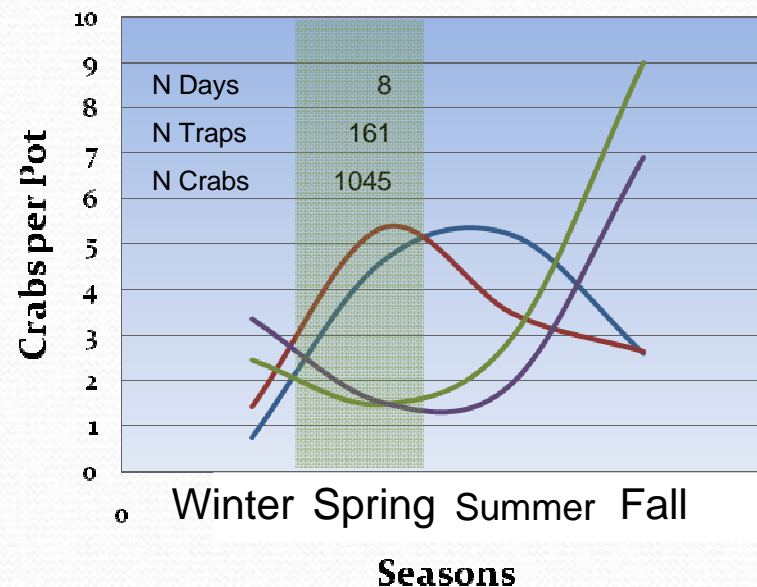
Map of **Port Royal** TED Study Area



CPUE Port Royal Area **Crabber** Data



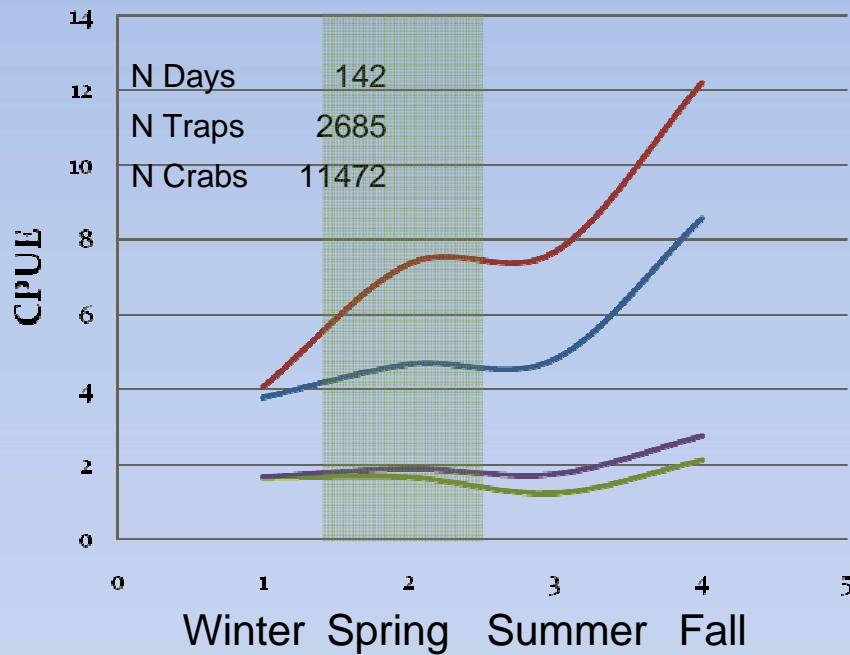
CPUE Port Royal Area **DNR** Data



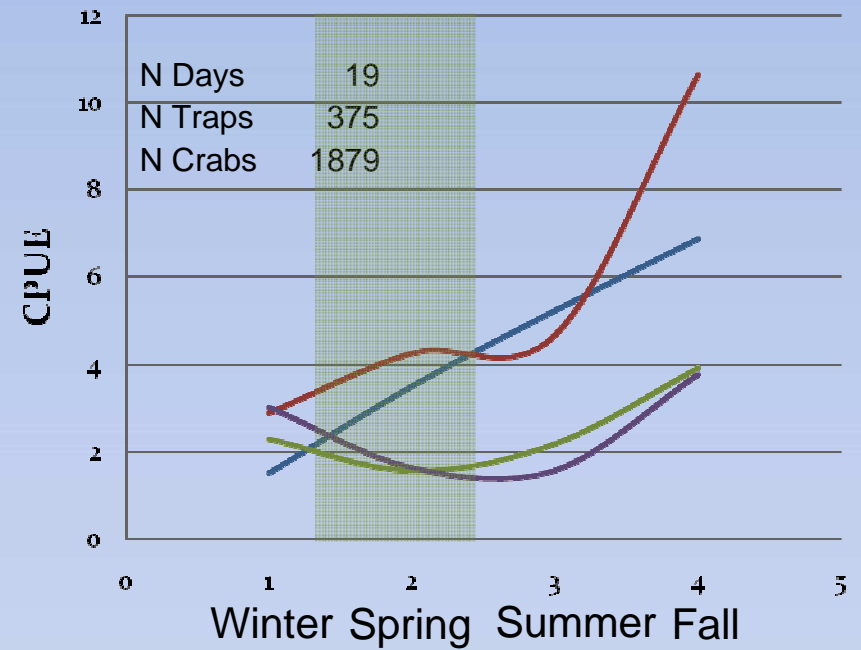
- CPUE Legal Crabs in Pots with TEDs
- CPUE Legal Crabs in Pots without TEDs
- CPUE Sublegal Crabs in Pots with TEDs
- CPUE Sublegal Crabs in Pots w/o TEDs



CPUE All Areas **Crabber** Data



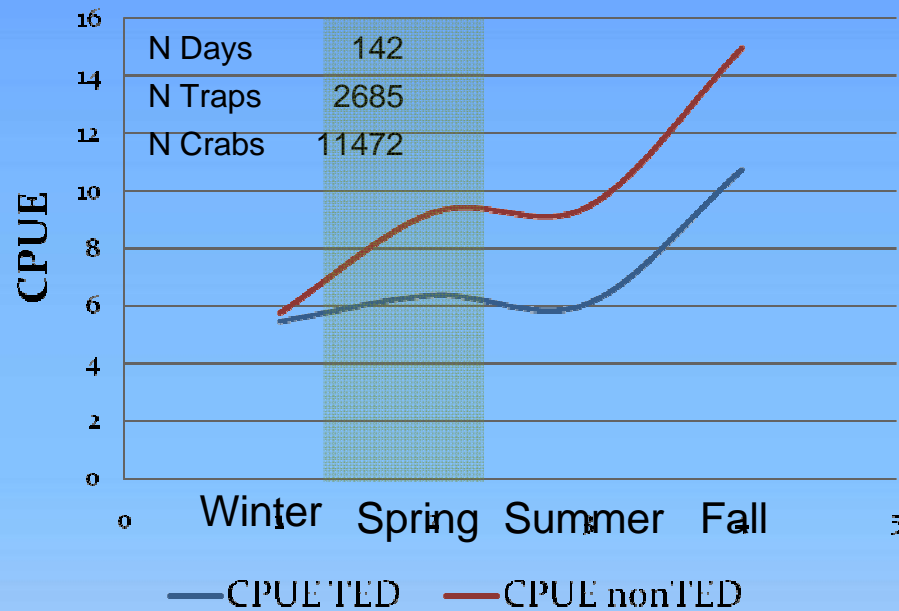
CPUE All Area **DNR** Data



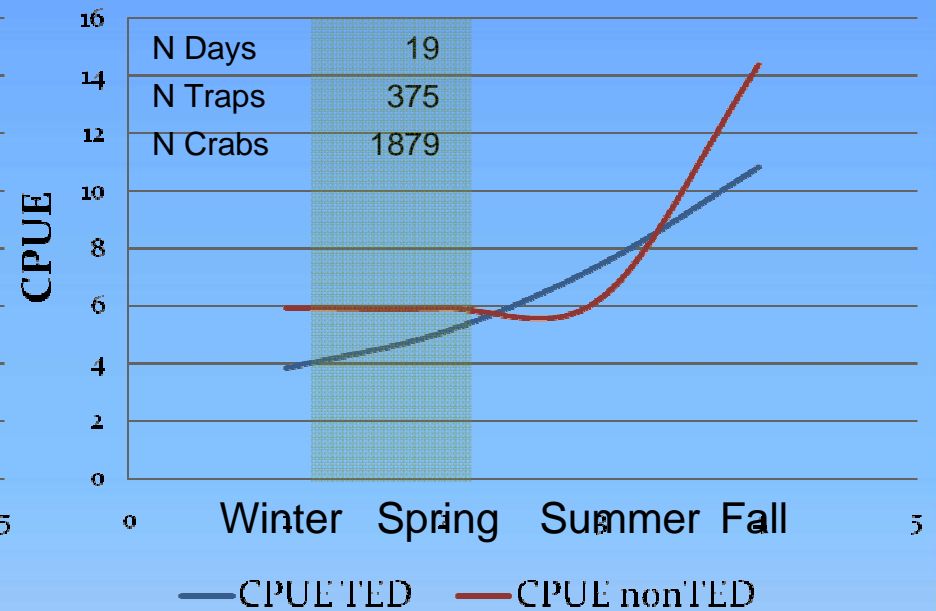
- CPUE Legal Crabs in Pots with TEDs
- CPUE Legal Crabs in Pots without TEDs
- CPUE Sublegal Crabs in Pots with TEDs
- CPUE Sublegal Crabs in Pots without TEDs



All **Crabber** TEDs vs. nonTEDs



All **DNR** TEDs vs. nonTEDs



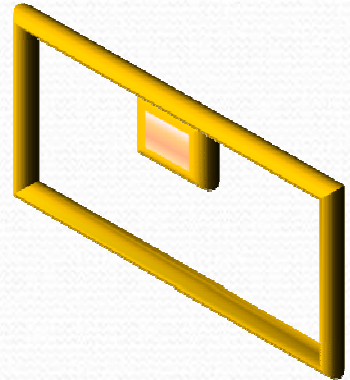
Possible Management Suggestions

- TEDs Used Seasonally for Commercial Crabbers
- TEDs Used on Pots placed at Depths of <10 Feet
- TEDs Used on Peeler Pots
- TEDs Used on Recreational Crab Pots because of their Prevalence at the end of Docks or in Shallow Creeks



Proposed Spring '08 Research

1. Recreational Crabber Logbook study - TEDs vs. non TEDs
 - 7 participants around St. Helena Island (and possibly Kiawah Island)
 - All recreational crabbers given two new pots one with TEDs one w/o TEDs
 - CPUE data recorded in provided logbook every time traps are pulled
2. Two Week Intensive Terrapin Capture Study
 - One crabber contracted to fish 20 traps 10 w/ TEDs, 10 w/o TEDs fished Late April – Early May
 - Targeted areas where Terrapins are known to be located
3. Trap Escapement TEDs vs. non TEDs Study
 - Fill TED and non TED crab traps with marked crabs of various sizes
 - Pull traps every hour to determine loss of crabs over a given time
4. Alternate TED Size and Orientation Study
 - Test the 1.75"x4.75" TED vertically and horizontally
 - Test 2"x6" vertically and a modified 2"x6" with a 1/4" notch



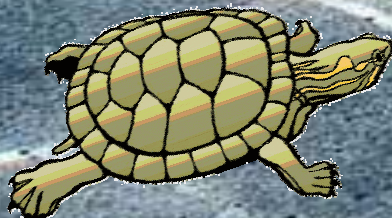
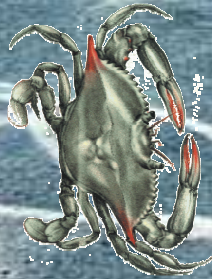
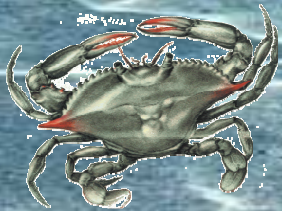
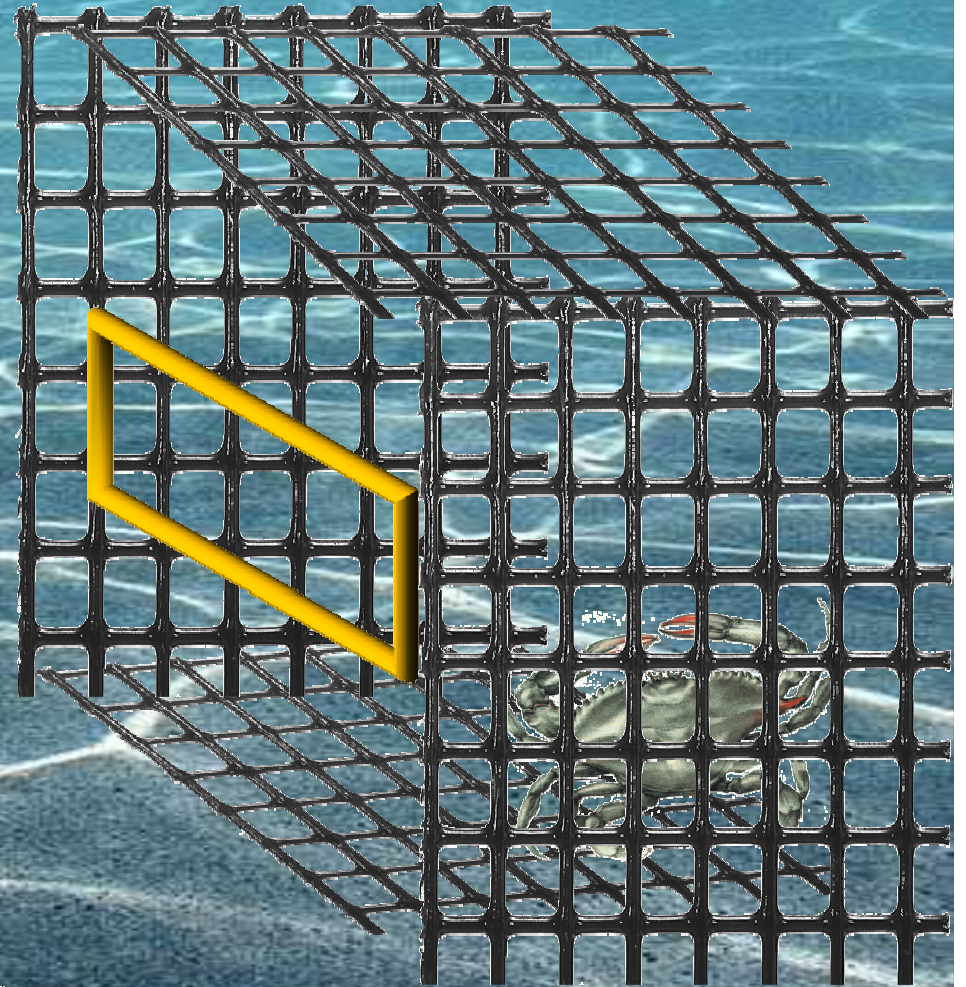
Conclusions

1. Using Crabbers is Viable Method for Data Collection
2. Terrapin Captures More Prevalent in April & May and in Depths of < 10 Feet
3. More Data Entry and Analysis Needed to Determine the Effect of TEDs on Crab Catch
4. More TED Research Needed this Spring:
 1. Different TED Sizes/Shapes, Orientations on Traps
 2. Behavior Studies on Crabs and Terrapins
5. Crabbers are not the only cause of Declining Terrapin Populations
 1. Domestic animals and Raccoons Raiding Terrapin Nests
 2. Mortality of Females Crossing Causeways and the Mowing of Causeway Shoulder



Special Thanks!

- **Walter Hughes, William Gay
and Allen Grooms**
- **Barry Gooch & Nathan West**
- **David Whitaker**



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